



# **Natural Gas Infrastructure R&D and Methane Emissions Mitigation Workshop**

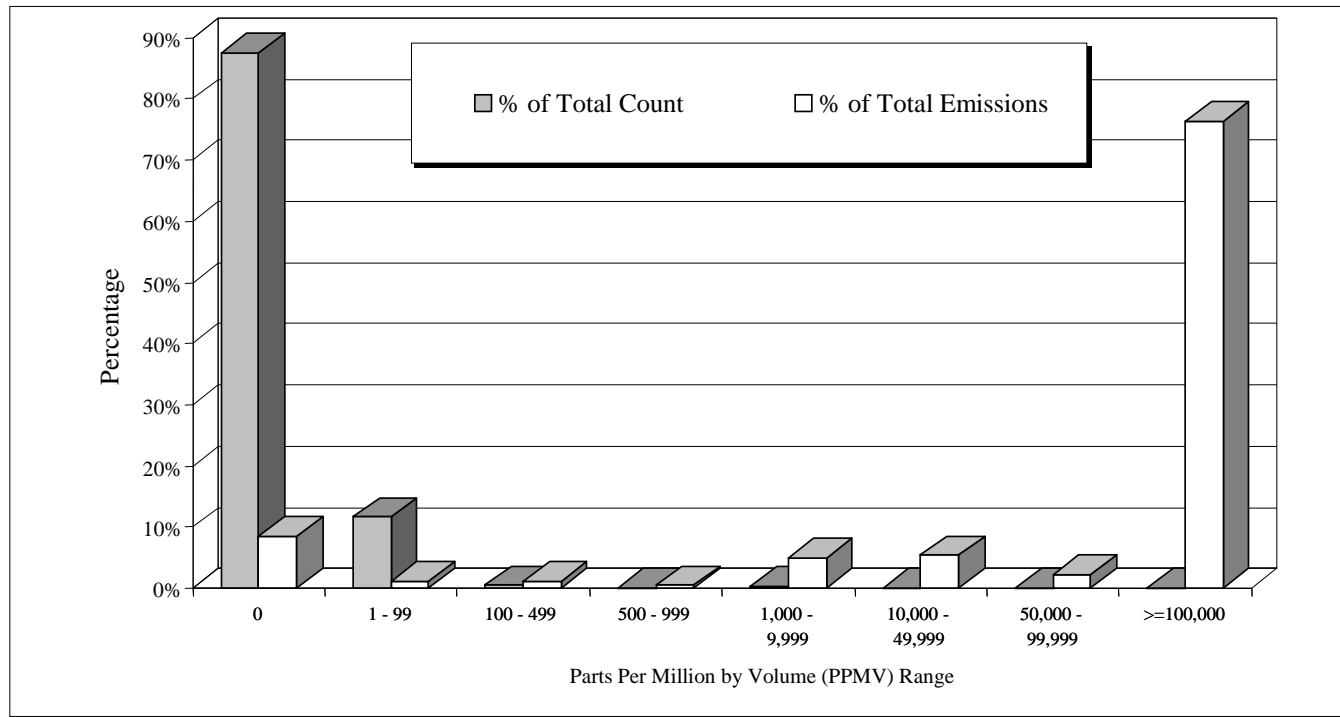
**Leak Detection/Fugitive Emissions Monitoring and Advanced Sensors,  
Controls, Models and Platforms Panel**

**The Advanced Manufacturing Office (AMO) at the U.S. Department of Energy  
Office of Energy Efficiency and Renewable Energy**

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# Fugitive Emissions in the Oil & Gas Industry

- 90% of controllable fugitive emissions come from only about 0.13% of the components<sup>1</sup>
- The trick is to find those big leakers



1: American Petroleum Institute. *Analysis of Refinery Screening Data*; Publication # 310, Washington, DC, November 1997.

# Leak Detection Instruments and Limitations

- Infrared Leak Imaging Cameras
  - Do not quantify
  - Expensive
- Remote Methane Leak Detector
  - Does not quantify
  - Requires laser reflection background
  - Range 100 feet
- FTIR Downwind Screening
  - Does not pinpoint source
- Hand-held sniffers (OVA, TVA)
  - Labor intensive testing each source individually
  - Quantification correlation data not useable for repair criteria

# Quantification Instruments and Limitations

- High Volume Sampler
  - Capacity (10 cfm)
- Anemometers (vane, hot-wire)
  - Access to sources
- Bagging (flow-through, calibrated bags)
  - Access to / enclosure of sources
  - Temperature
- Turbine meters
  - Adaptation to source
- Acoustic detector with calibration equation
  - Tricky to use properly

# What does the industry want/need?

- “Cheap, installed leak sensor”
  - Leaks alert the operator
  - Adsistor ring combined with audio/visual signal



**Adsistor Ring**  
Environmental Systems Inc.

+



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**Leak  
notifies  
you**

**Cheap Alarm**

- Visual Guide for estimating quantity of emissions viewed by IR Camera

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